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EXAMINER

FEELY, MICHAEL J

ART UNIT

PAPER NUMBER

1712

DATE MAILED: 04/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/543,628

Applicant(s)

IWAMOTO, NANCY E.

Examiner

Michael J. Feely

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 40-42, 44-46, 48-51 and 53-57 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 40-42, 44-46, 48-51 and 53-57 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 April 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Pending Claims

1. Claims 40-42, 44-46, 48-51, and 53-57 are pending.

Previous Objection to the Specification

2. The objection to the Specification has been withdrawn.

Previous Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. The rejection of claims 40-42, 44-46, 48-51, and 53-57 under 35 U.S.C. 112, second paragraph, *stands*.

The previous rejection addressed the following claim language:

(1) *wherein the candidate polymer comprises a high adhesive strain component with respect to the candidate substrate – (see claim 40);*

(2) *wherein the candidate first polymer comprises a high adhesive strain component with respect to the candidate substrate and the candidate second polymer – (see claim 49); and*

(3) *wherein the candidate second polymer comprises a high adhesive strain component with respect to the candidate first polymer – (see claim 49).*

On page 8 of Applicant's response (dated 24 January 2005), Applicant states the following: "*Interpretation B*, as the Examiner labels it, is the proper and intended meaning of "high adhesive strain." Accordingly, the scope of pending claims 40 and 49 is as follows:

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Scope of claim 40:

An electronic component, comprising:

- a candidate substrate; and
- a candidate polymer, wherein the candidate polymer comprises *a material that exhibits a high adhesive strain when coupled to the candidate substrate;*

wherein the candidate substrate and the candidate polymer are coupled to one another to form an interface, and

wherein the substrate and the polymer are selected as candidates based on a software program.

Candidate Polymer
Candidate Substrate

Scope of claim 49:

An electronic component, comprising:

- a candidate substrate;
- a candidate first polymer, wherein the candidate first polymer comprises *a material that exhibits a high adhesive strain when coupled to the candidate substrate and the candidate second polymer;* and
- a candidate second polymer, wherein the candidate second polymer comprises *a material that exhibits a high adhesive strain when coupled to the candidate first polymer;*

wherein the candidate first polymer and the candidate second polymer are coupled to one another to form an interface;

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wherein the first polymer and the second polymer are selected as candidates based on a software program; and

wherein one of the candidate first polymer or the candidate second polymer is coupled to the candidate substrate.

Candidate 2 nd Polymer	OR	Candidate 1 st Polymer
Candidate 1 st Polymer		Candidate 2 nd Polymer
Candidate Substrate		Candidate Substrate

The Applicant has addressed the first part of the rejection; however, they have failed to clarify the true meaning of “*high adhesive strain*”. They point to pages 16 and 17 of the original specification, along with the articles submitted in the IDS to define what the parameters are for a “high adhesive strain”.

After reviewing these documents, it is still unclear what meaning “high adhesive strain” has in the claimed invention. Furthermore, this phrase appears to be nothing more than a relative term having no defined comparative basis. Based on pages 16 and 17, along with Figures 3-9, this “high adhesive strain” is determined by bonding a variety of candidate polymers to a common substrate material. Each polymer has its own bonding interface with the common substrate material. Non-numeric strain values are generated for each interface, and these values are compared to one another to determine which interface has the highest strain value. These generated values are then confirmed through actual experimentation.

Looking at claim 40 as an example, it appears that the “candidate substrate” represents the common substrate material used to determine adhesive strain values; however, it is unclear what other materials are being referenced to establish a “high adhesive strain” value and ultimately, “the candidate polymer.” In fact, the comparative basis is open to any polymer

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capable of forming an interface with the common substrate material. This would include polymers that are not adhesive by nature. In such a case, any adhesive polymer would inherently qualify as a “high adhesive strain” material. ***Hence, this relative limitation carries little to no weight in the scope of the claims, and any adhesive material would inherently satisfy this limitation.***

The same holds true for claim 49. When describing “the candidate first polymer,” it appears that both the “candidate substrate” and “the candidate second polymer” are the common substrate materials used to determine adhesive strain values; however, it is unclear what other materials are being referenced to establish a “high adhesive strain” value and ultimately, “the candidate first polymer.” When describing “the candidate second polymer,” it appears that “the candidate first polymer” is the common substrate material used to determine adhesive strain values; however, it is unclear what other materials are being referenced to establish a “high adhesive strain” value and ultimately, “the candidate second polymer.” Once again, the comparative basis is open to any polymer capable of forming an interface with the common substrate material. This would include polymers that are not adhesive by nature. In such a case, any adhesive polymer would inherently qualify as a “high adhesive strain” material. ***Hence, this relative limitation carries little to no weight in the scope of the claims, and any adhesive material would inherently satisfy this limitation.***

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Previous Claim Objections

5. The objection to claims 49-51 and 53-57 has been overcome by amendment.

Previous Claim Rejections - 35 USC § 102/103

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The rejection of claims 40-42, 44-46, 48-51, and 53-57 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Watanabe et al. (US Pat. No. 3,932,689) *stands*.

Regarding claims 40-42, 44-46, 48, 56, and 57, Watanabe et al. disclose **(40)** an electronic component (Abstract; Example 1) comprising:

- a candidate substrate (Example 1: column 9, lines 45-50 **OR** Example 1: column 9, lines 50-62); and
- a candidate polymer, wherein the candidate polymer comprises *a material that exhibits a high adhesive strain when coupled to the candidate substrate* (Example 1: column 9, lines 29-45);

wherein the candidate substrate and the candidate polymer are coupled to one another to form an interface (Example 1: column 9, lines 29-62);

(44) wherein the candidate polymer comprises at least one of the following chemical precursors *see claim for list* (Example 1: column 9, lines 32-36); and

(45 & 46) wherein the candidate polymer is amorphous, crosslinked, crystalline or branched (Example 1: column 9, lines 29-62; column 5, lines 66-68).

Regarding claims 49-51 and 53-57, Watanabe et al. disclose: (49) an electronic component (Abstract; Example 1) comprising:

- a candidate substrate (Example 1: column 9, lines 50-62);
- a candidate first polymer, wherein the candidate first polymer comprises *a material that exhibits a high adhesive strain when coupled to the candidate substrate and the candidate second polymer* (Example 1: column 9, lines 29-45);
and
- a candidate second polymer, wherein the candidate second polymer comprises *a material that exhibits a high adhesive strain when coupled to the candidate first polymer* (Example 1: column 9, lines 45-50);

wherein the candidate first polymer and the candidate second polymer are coupled to one another to form an interface (Example 1: column 9, lines 29-62); and

wherein one of the candidate first polymer or the candidate second polymer is coupled to the candidate substrate (Example 1: column 9, lines 29-62);

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(53) wherein at least one of the candidate polymers comprises at least one of the following chemical precursors *see claim for list* (Example 1: column 9, lines 32-36); and

(54 & 55) wherein at least one of the candidate polymers is amorphous, crosslinked, crystalline or branched (Example 1: column 9, lines 29-62; column 5, lines 66-68).

Watanabe et al. do not disclose the electronic component according to claim 40 or 49, wherein: (40 & 49) the substrate, the first polymer (and second polymer) are selected as candidates based on a software program; wherein:

(41 & 50) the software program comprises strain cycling data; (56) wherein the material that exhibits high adhesive strain is determined by the software program; and (57) wherein the software program determines strain intercept; or

(42 & 51) the software program evaluates at least one property of the interface, including size, shape and bond geometry; and (48) wherein the software program evaluates at least one of the following: a set of modeling data, a set of durability data or a set of evaluation data.

It should be noted that these are product-by-process limitations. It has been found that, “Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process” – *In re Thorpe*, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

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The final product is also capable of being made if: a) the selection of materials was done using a text containing data; b) the determination of adhesive strain and strain intercept was done experimentally or mathematically by hand; and c) the evaluation of the interface was done experimentally or mathematically by hand. The changes in these process steps would have no bearing on the actual final product, whether it was made by the claimed process or by steps a), b), and c).

Therefore, the product of Watanabe et al. would have anticipated or would have been an obvious variant of the claimed article.

9. Claims 40-42, 44-46, 48-51, and 53-57 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Taniguchi (US Pat. No. 3,932,689) and Asai et al. (US Pat. No. 4,345,959).

Normally, only one reference is used in making a rejection under 35 U.S.C. 102; however, a 35 U.S.C. 102 rejection over multiple references has been held to be proper when the extra references are cited to: (A) Prove the primary reference contains an "enabled disclosure;" (B) Explain the meaning of a term used in the primary reference; or (C) Show that a characteristic not disclosed in the reference is inherent. In the following rejection, Asai et al. is used to show that *Epikote 828* is a Bisphenol-A type epoxy material.

Regarding claims 40-42, 44-46, 48, 56, and 57, Taniguchi discloses **(40)** an electronic component (Abstract; column 4, line 55 through column 5, line 40) comprising:

- a candidate substrate (Figure 1; column 4, lines 59-62); and

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- a candidate polymer, wherein the candidate polymer comprises *a material that exhibits a high adhesive strain when coupled to the candidate substrate* (Figure 1; column 4, lines 59-62);

wherein the candidate substrate and the candidate polymer are coupled to one another to form an interface (Figure 1; column 4, lines 59-62);

(44) wherein the candidate polymer comprises at least one of the following chemical precursors *see claim for list* (Figure 1; column 4, lines 59-62; Table; *see Asai et al: column 6, lines 16-19*); and

(45 & 46) wherein the candidate polymer is amorphous, *crosslinked*, crystalline or branched (Figure 1; column 4, line 59 through column 5, line 2).

Regarding claims 49-51 and 53-57, Taniguchi discloses (49) an electronic component (Abstract; column 4, line 55 through column 5, line 40) comprising:

- a candidate substrate (Figure 1; column 4, lines 59-62);
- a candidate first polymer, wherein the candidate first polymer comprises *a material that exhibits a high adhesive strain when coupled to the candidate substrate and the candidate second polymer* (Figure 1; column 4, lines 59-62);
and
- a candidate second polymer, wherein the candidate second polymer comprises *a material that exhibits a high adhesive strain when coupled to the candidate first polymer* (Figure 1; column 4, line 62 through column 5, line 2);

wherein the candidate first polymer and the candidate second polymer are coupled to one another to form an interface (Figure 1; column 4, line 59 through column 5, line 2); and

wherein one of the candidate first polymer or the candidate second polymer is coupled to the candidate substrate (Figure 1; column 4, line 59 through column 5, line 2);

(53) wherein at least one of the candidate polymers comprises at least one of the following chemical precursors *see claim for list* (Figure 1; column 4, line 59 through column 5, line 2; Table; *see Asai et al: column 6, lines 16-19*); and

(54 & 55) wherein at least one of the candidate polymers is amorphous, *crosslinked*, crystalline or branched (Figure 1; column 4, line 59 through column 5, line 2).

Taniguchi does not disclose the electronic component according to claim 40 or 49, wherein: (40 & 49) the substrate, the first polymer (and second polymer) are selected as candidates based on a software program; wherein:

(41 & 50) the software program comprises strain cycling data; (56) wherein the material that exhibits high adhesive strain is determined by the software program; and (57) wherein the software program determines strain intercept; or

(42 & 51) the software program evaluates at least one property of the interface, including size, shape and bond geometry; and (48) wherein the software program evaluates at least one of the following: a set of modeling data, a set of durability data or a set of evaluation data.

It should be noted that these are product-by-process limitations. It has been found that, “Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the

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prior product was made by a different process” – *In re Thorpe*, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

The final product is also capable of being made if: a) the selection of materials was done using a text containing data; b) the determination of adhesive strain and strain intercept was done experimentally or mathematically by hand; and c) the evaluation of the interface was done experimentally or mathematically by hand. The changes in these process steps would have no bearing on the actual final product, whether it was made by the claimed process or by steps a), b), and c).

Therefore, the product of Taniguchi would have anticipated or would have been an obvious variant of the claimed article.

Response to Arguments

10. Applicant’s arguments, see pages 5-7, filed 24 January 2005, with respect to the objection to the specification have been fully considered and are persuasive. The objection to the specification has been withdrawn.

11. Applicant’s arguments, see page 8, filed 24 January 2005, with respect to the rejection of claims 40-42, 44-46, 48-51, and 53-57 under 35 USC 112, second paragraph, have been fully considered and are ***not*** persuasive. Applicant argues that, “Pages 16 and 17, of the original specification, along with the articles submitted by Nancy Iwamoto through the Information Disclosure System, show an Example of adhesive strain and what the parameters are for a high adhesive strain.”

After reviewing these documents, it is still unclear what meaning “high adhesive strain” has in the claimed invention. Furthermore, this phrase appears to be nothing more than a relative

term having no defined comparative basis. Based on pages 16 and 17, along with Figures 3-9, this “high adhesive strain” is determined by bonding candidate polymers to a common substrate material. Each polymer has its own bonding interface with the common substrate material. Non-numeric strain values are generated for each interface, and these values are compared to one another to determine which interface has the highest strain value. However, the comparative basis (the other candidate polymers) is not defined as any particular benchmark or standard. This leaves the comparative basis open to any set of materials that are capable of forming an interface with the common substrate material.

12. Applicant’s arguments, see pages 10-13, filed 24 January 2005, with respect to the rejection of claims 40-42, 44-46, 48-51, and 53-57 under 35 USC 102/103 over Watanabe et al. (US Pat. No. 3,932,689) have been fully considered and are *not* persuasive.

Applicant’s arguments, see pages 13-16, filed 24 January 2005, with respect to the rejection of claims 40-42, 44-46, 48-51, and 53-57 under 35 USC 102/103 over Taniguchi et al./Asai et al. (US Pat. No. 5,162,140/US Pat. No. 4,345,959) have been fully considered and are *not* persuasive.

It should be noted that the Applicant has applied the exact same set of arguments for each reference(s).

Both prior art rejections are categorized as product-by-process rejections. A product-by-process rejection is made because the determination of patentability is based *on the product itself*. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, *the claim is unpatentable even though the prior product was made by a different process*.

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- Applicant opens (*see paragraph bridging pages 10 & 11 and the first full paragraph on page 14*) with an argument stating: “The Applicant believes that utilizing a computer modeling software **prior** to laboratory experimentation with actual polymers and interfaces greatly reduces the costs required and greatly enhances the researcher’s time – meaning that researchers do not have to use trial and error as an experimental procedure in finding those components with high adhesive strain.”
 - This may be the case; however, the final product will be the same no matter how long it takes to develop it. It will be the same whether it is developed using software or through trial and error experimentation. The development method and time does not change the final product in any way.
- Applicant continues (*see first full paragraph on page 11 and the second full paragraph on page 14*) with, “it is important to note that the candidate polymers have particular characteristics with respect to the particular substrate or polymer – which is the degree of adhesive strain based on strain cycling information – that contributes to how those materials are chosen to be incorporated into the electronic component...The concept of adhesive strain components with respect to the candidate substrate, candidate polymer, candidate first polymer or candidate second polymer are not product-by-process limitations in the present application. An adhesive strain component would be similar to any physical characteristic of a material with respect to or in combination with another material, such as melting point, a boiling point or a vaporization point.”
 - The examiner agrees with this assertion. However, as discussed above in the rejection under 35 USC 112, 2nd paragraph, “high adhesive strain” is a relative

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property. It is so vaguely defined that this relative property carries little to no weight in the scope of the claims, and any adhesive material would inherently satisfy this limitation. The specifics regarding claims 40 and 49 are discussed above in the rejection under 35 USC 112, 2nd paragraph.

- Applicant then address (*see the first full paragraph on page 12, the paragraphs bridging pages 12 & 13, the first full paragraph on page 15, and the first full paragraph on page 16*) the product-by-process nature of the claims by concluding with: “The Applicant also strongly disagrees with the Examiner’s contention that the software program and related analysis merely indicates a product by process. As described earlier, it is a significant cost saving and time savings to the researchers and related companies to be able to computer model interfaces and suggest candidate polymers and/or candidate interfaces before actual experimentation begins. You are not merely achieving the same result by using the software program and related analysis as seen in the cited art, but you are actually able to improve on those *techniques by elimination experimental trial and error with actual polymers, substrates and interfaces.*”
 - The Examiner respectfully disagrees. The *technique* might be an improvement over the prior art *techniques*; however, the final product is the same. It doesn’t matter how much time is saved in the end. If it took ten years of trial and error experimentation to determine a set of materials that the software modeling program generated in five minutes, the materials are still the same materials. Even if somebody randomly chose the same materials generated by the software modeling

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technique, the final product would be the same. Applicant is claiming a product – not a process; hence, the patentability of the claim is based on the product itself.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

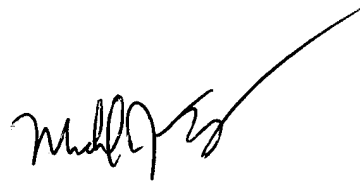
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Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Feely whose telephone number is 571-272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Michael J. Feely', with a long, sweeping horizontal line extending to the right.

Michael J. Feely
Primary Examiner
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April 27, 2005